PTO-Driven 6" Wood Chipper

OWNER'S MANUAL

⚠ Read carefully and understand **RULES FOR SAFE OPERATION** and instructions before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item #180100

Thank you very much for choosing a NORTHERN TOOL + EQUIPMENT CO., INC., Product! For future reference, please complete the owner's record below:

Model: _____ Purchase Date: _____

Save the receipt, warranty and these instructions. It is important that you read the entire manual to become familiar with this product before you begin using it.

This machine is designed for certain applications only. Northern Tool + Equipment strongly recommends this machine is not modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, DO NOT use the machine until you have first contacted Northern Tool + Equipment to determine if it can or should be performed on the product.

For technical questions and replacement parts, please call 1-800-222-5381.

DESCRIPTION & INTENDED USE

The PTO-DRIVEN 6" wood chipper features an advanced design with a compact structure, superior technology and substantial attack strength. This model is safe and easy to operate.

Technical Specifications

Item	Description
PTO	540 RPM
Flywheel Dia.	2 Feet (605mm)
Flywheel RPM	1220
Max Chipping Dia.	6"
Net Weight	772 Lbs. (350 kg)

GENERAL SAFETY RULES

WARNING: Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

WARNING: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions or situations that could occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

SAVE THESE INSTRUCTIONS

WORK AREA

- **Keep everyone — especially children — away from the area of operation. Anyone who has not read this manual and received instructions from a qualified person should not be in the area.**

- **Provided labels on the unit advise the user of proper hitch dimensions and maximum safe operating speed.** Check that proper danger labels are supplied with the drive-line (replacements are available from your drive-line supplier). Provide easy-to-understand instructions for proper drive-line operation, maintenance and repair in the operator's manual.

PERSONAL SAFETY

- **Stay alert, watch what you are doing and use common sense when operating a chipper. Do not use a chipper while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating a chipper may result in serious personal injury.

- **Do not attempt to operate the chipper until you have read and understood the owner's manual.**

- **Always keep the guards and chip deflector installed properly while operating the chipper.**

- **Keep the decals in place and in good repair.** The factory or your dealer will furnish new decals upon request.

- **Keep hair, hands, feet and other extremities out of and away from the hopper.** Make sure there are no loose ends or strings to be caught by the machine.

- **Point the discharge chute away from doorways,** sidewalks, or any areas where your view is obstructed. The chute should be pointed downwind when possible or the fines will blow into your eyes and down your neck.

- **WEAR PROTECTIVE GEAR:**
  - **EYES** — Wraparound ANSI-approved safety glasses.
  - **EARS** — Ear plugs
  - **HANDS** — Leather gloves
  - **FEET** — Steel-toed boots
  - **LEGS** — Heavy pants
  - **ARMS** — Long-sleeved shirt

- **Always use the appropriate eye and ear protection and other safety equipment.** Safety equipment such as dust mask, non-skid safety shoes and a hardhat used for appropriate conditions will reduce personal injuries.

- **Avoid accidental starting.** Disconnect chipper from PTO when not in use, and when moving chipper to another work area.

- **Never leave the chipper running unattended.**
- **Do not attempt alterations, repairs, or adjustments while the chipper head is turning.** Always disconnect the PTO and stop the motor.
- **ALWAYS make sure the feed roll drive-shaft and pivots are properly lubricated.**
- **ALWAYS make sure the feed roll clutch is properly lubricated and the clutch releases when the handle is pushed toward the chute.**
- **ALWAYS make sure the PTO shaft does not come apart or bottom out during the normal lifting range.**
- **Check the chip pile to see if the blades need to be serviced. Long slivers in the chip pile are a good indication that the blades are dull and need sharpening.**

CAUTION: Turn the chipper head over by hand before applying power to make sure that the head is clear, all the bolts are clear and the knives clear the case and cutter bar.

DRIVE-LINE SAFETY CHECKLIST

DRIVE-LINE SPECIFICATIONS **The first step toward a safe application is to specify and test the drive-line to make sure it operates properly under expected field conditions.**

- Specify and test the proper size joints and telescoping members based upon the power required by the implement, speed of rotation, joint angles, shock loads, and expected life. More information may be found in all drive-line manufacturers' catalogs.
- Design and test the hitch angle to prevent the drive-line from:
  - Extending beyond the recommended maximum length.
  - Bottoming out.
  - Reaching a position that allows joints to lock.
  - Exceeding the maximum allowable angle for constant velocity (CV) joints.
- Specify and test telescoping members to allow the lowest possible thrust loads, considering the expected working conditions.
- Specify and test torque limiters to control excessive shock loads. Where necessary, specify and test overrunning clutches to prevent inertial loads from overpowering the tractor.
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HAZARD REDUCTION **The second step in specifying a safe drive-line application is to eliminate as many hazards as possible.**

- On drive-lines with torque limiting or overrunning devices, specify that the device be positioned on the end of the drive-line by the implement.
- For implement connections which require bolts or set screws, select and/or supply hardware which minimizes protrusions.
- For tractor PTO shaft connections, specify a safety type yoke (twist or slide collar) to minimize protrusions.
- Provide a proper clearance zone for the operation of the drive-line to avoid damaging the shielding components.
- Some common areas of interference are:
  - Three point linkage.
  - Extended or eye loop hitch pins.
  - Hydraulic hoses.

GUARDING **Hazards which cannot be eliminated effectively must be guarded against at all times.**

- The PTO master shield, integral drive-line shield and implement input connection shield should provide an interactive guarding system.
- Provide instructions by labels or manuals. The implement should be used only with the tractor's PTO master shield in place.
- Specify and test an integral drive-line shield with end cones which will overlap, but not interfere with the PTO master shield or implement input connection shield.
- Provide an implement input connection shield to interact with the integral drive-line shield to provide guarding of the shaft coupling and any torque limiting device installed on the drive-line.
- Check that all routine maintenance of the drive-line can be done without removal of the shields.

MACHINE OPERATION

⚠**CAUTION!** Turn the chipper head over by hand before applying power to make sure that the head is clear, all the bolts are clear and the knives clear the case and cutter bar.

⚠**CAUTION:** Do not move the unit while the flywheel is turning. Block the wheels and set the brake while running the head.

1. The chipper is a flywheel-and-knife type of chipper, not a shredder. The blades actually chip the limbs as they are fed into the head. The blades must be sharp to operate properly. Dirt, rocks, nails, or other foreign material will shorten blade life.
2. Before operating the chipper, review the machine checklist. After turning the chipper by hand and making sure there are no obstructions in the head, start the tractor and raise the chipper until the PTO shaft is within 15 degrees of straight.
3. Start the chipper slowly with the PTO engaged, and release the PTO clutch slowly. Gradually increase speed until the tractor PTO speed is 540 RPM.
4. The material will feed into the head more easily if you start the pieces with the large end first. The feed roll will fold branches as they are pulled into the hopper. Occasionally, a limb fork may have to be cut to feed properly.
5. If the material stops feeding, sometimes a little push on the long end of the limb will help.
6. If the material stops the feed roll, release the feed roll clutch by pushing it toward the chute. Hold the clutch in the disengaged mode, and pull the material out of the hopper. Release the feed roll clutch and the feed roll will turn again.

NOTE: Cut only clean material, or blade life will be shortened.

7. Watch the discharge chute while operating the unit. If the chips stop flowing, stop feeding material into the unit by moving the feed roll clutch handle toward the chute and pulling the material from the hopper. Most of the time this will be enough to clear the chips out of the unit. If the unit slows down noticeably, first shut off the PTO power, then the tractor, and remove the key.
8. Unplug the head by turning it backwards by hand with the discharge chute and top section of the wrapper off.
9. Remove the chips from the top of the head. If this fails, remove the clean-out door, located on the lower part of the front side-plate of the chipper below the main shaft, then work the chips out of the case.
10. Replace the clean-out door after all the chips are removed, being sure to use both

the lock washers and flat washers.

11. Do not operate the unit without the deflector in place.
12. Before stopping the chipper, be sure the all of the material is out of the head and out of the feed roll.
13. All of the material in the chute must be gone or the unit could jam on a small piece of material. This can usually be cleared by turning the unit backwards by hand.
14. To replace the blades, take the PTO shaft out of gear, then turn off the tractor. The blades on most models are replaced or turned by removing the inspection plate on the side opposite the chute.
15. Unhook the feed roll springs, block the feed roll to maximum position, and, with an Allen wrench on the chute side and a socket on the other, remove the bolts. (Be careful not to drop any part inside.)
16. Remove the blade, clean the blade pocket and turn or sharpen the blade. Replace blade.
17. Torque the bolts to 50 ft.-lbs. in all holes so the bolts are straight through the flywheel. A small screwdriver or ice pick works well to clean pockets for the Allen wrench. Replace the inspection plate and reattach the springs.
18. Turn over by hand before applying power.
19. The cutter bar should be adjusted to 0.010 to 0.030" from the blades by loosening the bolts in the bottom of the chute in the slotted holes and moving the bar on slots.
20. Bolts are to be torqued to 35 ft.-lbs.
21. The cutter bar can be reversed and/or resharpened.
22. Dull blades cause many problems, such as: Seeming lack of power, plugging of the discharge chute, rough cutting with more vibration than usual, feed roll shaft broken, main bearing housing broken, main bearing working loose and the flywheel or blades hitting the case or bed knife, feed roll kicking out of gear, and not feeding.

INSPECTION, MAINTENANCE AND CLEANING

⚠**WARNING:** Always stop the PTO, turn off the engine and remove the key before performing any inspection, maintenance, adjustments or cleaning.

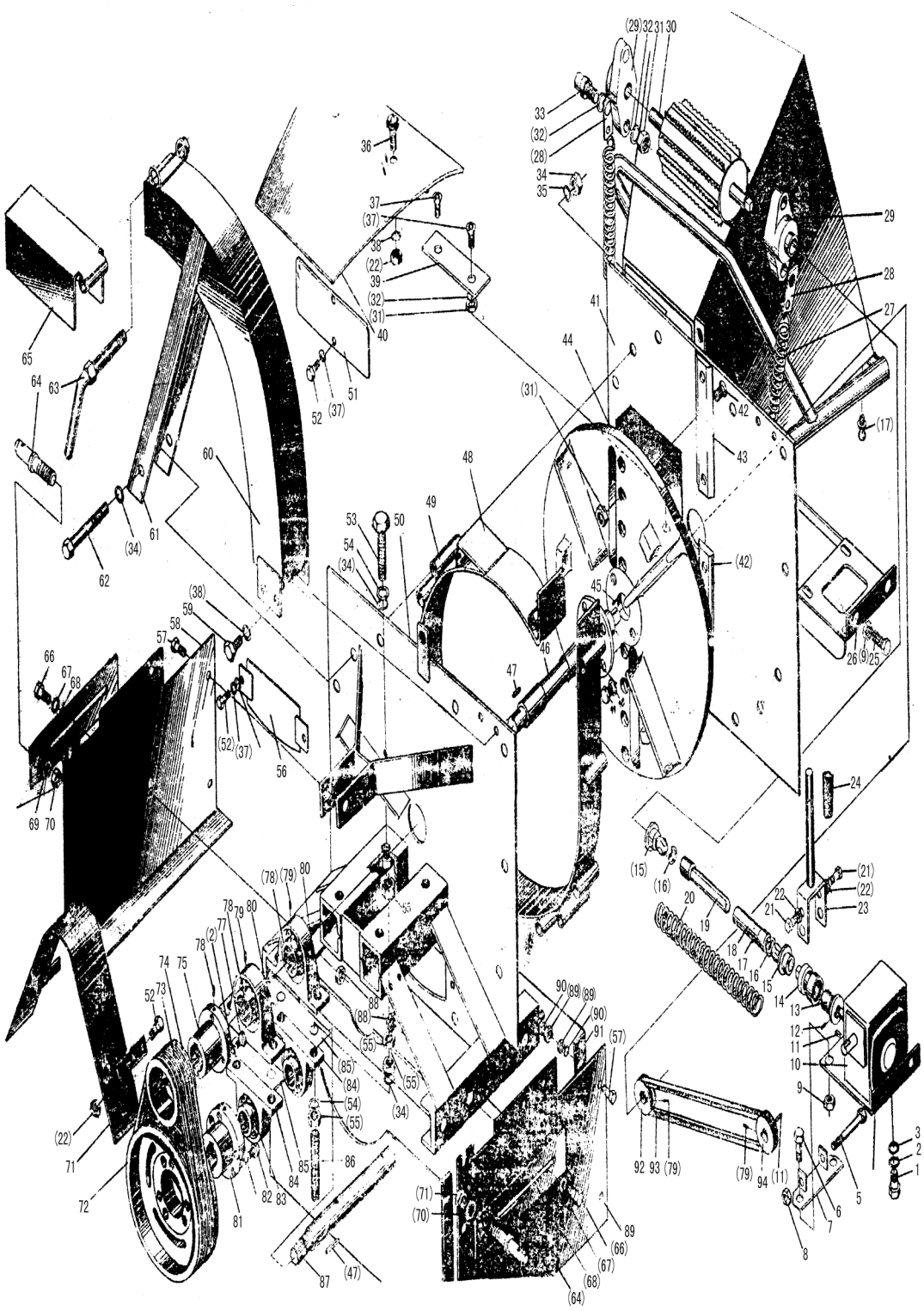
Lubricate:

- PTO shaft — 2 zerks on universals once a day with multipurpose grease.
- Slip Joint — Lubricate with multi-purpose grease.
- Feed roll pivot — 2 zerks on underside of chute end. Multipurpose grease every 4 to 8 hours of operation. If dust or fine particles make pivot bind, unhook feed roll springs, use cleaning solvent on pivot while moving up and down, wipe off, lubricate slides, and replace springs.
- Feed roll drive-shaft — Zerk on feed roll drive-shaft lubricates both the slide and both universal joints. Add multipurpose grease until grease shows at both universals every 4 to 8 hours of operation, particularly before each use. Occasionally remove and thoroughly clean this assembly.
- Feed roll clutch — While feed roll shaft is off, lubricate the feed roll clutch inside and outside with multipurpose grease.
- Gear box — Check label on the gear box for gear box lubrication.
- Check all bolts, set-screws and fasteners after running four hours, and once per day thereafter.
- Check for loose belts and broken pulleys, loose springs, dry slides and proper lubrication of both feed roll drive-line and feed roll clutch.
- The main drive belts on the chipper need co be tight. To tighten these belts, first loosen the four bottom nuts that hold the jack-shaft bearing. Loosen them about three turns, then move the nuts on the top of the bearings down an equal amount. Keep the jack-shaft parallel with the main shaft. Torque the bottom nuts to 80 ft.-lbs.
- The belts of the main drive on the PTO chipper should be checked every 8 hours of operation.
- Look for cracks, looseness or other signs of deterioration. For best performance, replace with a matched set of eight belts.
- The feed roll drive belt can be adjusted by first loosening the four bolts that hold the worm gear box to the base, then moving the gear box away from the chute and re-torques the bolts to 40 ft.-lbs.
- All decals and safety instructions should be kept clean and legible. It is the operator's responsibility to replace the decals as needed (they will be mailed at no charge).

TROUBLE SHOOTING

Symptom	Problems	Solution
Head slows but tractor does not	Main drive belts are slipping	Tighten
	Blades dull	Sharpen/reverse
Feed roll clutch kicking in and out of gear excessively	Blades dull	Sharpen/reverse
	Material jammed in chute	Release feed roll clutch and remove material by pulling cut of chute, trim forks, and feed into chute
Not chipping clean or chip reflector plugging	Blades dull	Sharpen/reverse
	Cutter bar rounded	Sharpen reverse
		Cutter bar not adjusted properly-adjust to tolerance level
		Chipper head turning too slowly — check PTO speed at 540 RPM
Unit won't feed	Feed roll slides dirty or dry	Clean/lubricate
	Fork in material too wide	Remove and trim
	Feed roll gear box belt loose	Tighten
		Feed roll tension springs stretched-replace

Part Diagram



PARTS LIST

NO.	DESCRIPTION	NO.	DESCRIPTION
1	Bolt 8×18	43	Chipper blade
2	Washer 8	44	Flywheel
3	Washer 8	45	Key C6*20
4	Gearbox mounting plate	46	Main shaft assembly
5	Bolt 6×90	47	Key C10*50
6	Bolt 8×25	48	Little around plate
7	Release hand seat	49	Outer protective cover assembly
8	Nut 6	50	Front supporting plate
9	Nut 8	5l	Rear cover
10	Worm reduction gear WPR40□30□1Il	52	Bolt 6×12
11	Key 4X 20	53	Bolt M14×1.5×50
12	Screw M6X 20	54	Wash l4
13	Clutch inner claw	55	Nut M14×1.5
14	Clutch outer claw	56	Lower cover
15	Spring for drive knob	57	Bolt M10×25
16	Circlip 25	58	Side plate(l)
17	Oil cup M6	59	Bolt M6×12
18	Outer drive shaft	60	Discharge pipe
19	Inner drive shaft	61	Support shelf, discharge pipe
20	Spring for drive shaft	62	Bolt M14×140
21	Bolt 6×90	63	Tightening handle
22	Nut 6	64	Connecting pin
23	Release handle	65	Protective cover
24	Main clutch handle	66	Bolt M12×1.5×45
25	Bolt 8×20	67	Washer 12
26	Gearbox support plate	68	Front connecting plate
27	Tension spring	69	Washer 22
28	Spring lug	70	Nut 22
29	Feed roll bearing204	71	Protective cover for pulley
30	Feed roll	72	Big belt pulley
31	Nut M10	73	Small belt pulley
32	Wash 10	74	Belt
33	Bolt 10×35	75	Small pulley hub
34	Nut M14x 1.5	76	Screw M6×16
35	Big wash 14	77	BoltM8×50
36	Screw M6X30	78	Feed roll bearing 209
37	Screw M10×27	79	Screw M6×20
38	Washer 6	80	Stand base P209
39	Chipper bed blade	81	Big pulley hub
40	Plastic plate	82	Bolt M10×50
41	Stickler Assembly	83	Feed roll bearing 207
42	Screw M10×27	84	Stand base P207

85	Bearing seat shim	90	Washer 12
86	Bearing seat adjust screw	91	Rear plate
87	Drive shaft	92	Driving pulley of W.R.G
88	Nut M10	93	Belt
89	Side plate	94	Driving pulley of W.R.G

⚠ WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- lead from lead-based paints,
- crystalline silica from bricks and cement and other masonry products, and
- arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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